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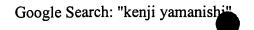
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... is shown in table 4. Algorithm FA % DR % Complexity EFRID 7.0 98.95 O(n) RIPPER-Artificial Anomalies [20] 2.02 94.26 O(n*log 2 n) **SMARTSIFTER** [21] - 82.0 O(n 2 ... seclab1.cs.memphis.edu/people/ jgomez/papers/infassu2002.pdf - Similar pages

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... Recently, Breunig et al. (2000) proposed the notion of LOF (local outlier factor)

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... to its own fitted value; Measure of **degree of outlier** in predictor; Useful for determining influence of each observation. Note that: www.geog.ucsb.edu/~joel/g210_w04/lecture_notes/ lect13/oh04_13_1.html - 5k - <u>Cached</u> - <u>Similar pages</u>

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Jun-ichi Takeuchi, Dr. Eng.

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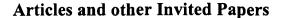
- K. Yamanishi, J. Takeuchi, G. Williamas, and P. Milne:
 "On-line Unsupervised Oultlier Detection Using Finite Mixtures with Discounting Learning Algorithms," Data Mining and Knowleged Discovery Journal, 8 (3): 275-300, May 2004.
- 2. N. Abe, J. Takeuchi, and M. Warmuth:

 "Polynomial Learnability of Stochastic Rules with respect to the KL-divergence and Quadratic Distance," *IEICE trans.* (D), Vol.E84-D No.3 pp. 299-316, 2001.
- 3. J. Takeuchi, N. Abe, and S. Amari:
 "The Lob-Pass problem," Journal of Computer and System Sciences, Vol. 61, No. 3, pp. 523-557, 2000.
- 4. A. Nakamura, J. Takeuchi, and N. Abe: "Efficient distribution-free population learning of simple concepts," *Annals of Mathematics and Artificial Intelligence*, 23, pp. 53-82, 1998.
- 5. J. Takeuchi:
 - "Characterization of the Bayes estimator and the MDL estimator for exponential/ families," *IEEE trans. Information Theory*, Vol. 43, No. 4, pp. 1165-1174, 1997.
- 6. J. Takeuchi:
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- 1. S. Morinaga, K. Yamanishi, & J. Takeuchi:
 - "Distributed Cooperative Mining for Information Consortia", *Proc. of the Nineth ACM SIGKDD International Conference on Knowledge Discovery and Data Mining, ACM Press* (KDD2003), 2003.
- 2. J. Takeuchi & K. Yamanishi:
 - "A Unifying Framework for Detecting Outliers and Change Points from Non-Stationary Time Series (in Japanese)", in Proc. of the fifth Workshop on Information-Based Induction Sciences (IBIS2002), 2002.
- 3. K. Yamanishi & J. Takeuchi:
 - "A Unifying Framework for Detecting Outliers and Change Points from Non-Stationary Time Series Data", *Proc. of the Eighth ACM SIGKDD International Conference on Knowledge Discovery and Data Mining, ACM Press* (KDD2002), 2002.
- 4. J. Takeuchi, T. Kawabata, and A. R. Barron:
 - "Properties of Jeffreys mixture for Markov sources", in Proc. of the fourth Workshop on Information-Based Induction Sciences (IBIS2001), pp. 327-332, 2001.
- 5. K. Yamanishi & J. Takeuchi:

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 - "Discovering Outlier Filtering Rules from Unlabeled Data -- Combining Supervised Learners with Unsupervised Learners--", in *Proc. of the Seventh ACM SIGKDD International Conference on Knowledge Discovery and Data Mining, ACM Press*, (KDD2001), 2001.
- 7. K. Yamanishi and J. Takeuchi:
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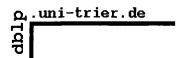
Other Conference Papers (selected)

- 1. J. Takeuchi & A. R. Barron:
 - "Robustly minimax codes for universal data compression", in Proc. of the 21st Symposium on Information Theory and its Applications (SITA'98), 1998.
- 2. J. Takeuchi & A. R. Barron:
 - "Asymptotically minimax regret for exponential families", in *Proc. of the 20th Symposium on Information Theory and its Applications (SITA'97)*, pp. 665-668, 1997. Best papers award at SITA'97.
- 3. J. Takeuchi & S. Amari:
 - "The alpha-parallel prior and its properties" (in Japanese), in *Technical Report of IEICE*, IT26-20, pp. 61-66, 1996.
- 4. J. Takeuchi & K. Kawabata:
 - "On data compression algorithms by Bayes coding for Markov sources" (in Japanese), in *Proc. of the 17th Symposium on Information Theory and its Applications (SITA'94)*, pp.513-516, 1994.

April 21st, 2004

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Go to the top of NEC R&D on Data & Text Mining



Jun-ichi Takeuchi

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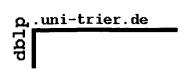
<u>Coauthor Index</u> - Ask others: <u>ACM DL</u> - <u>ACM Guide</u> - <u>CiteSeer</u> - <u>CSB</u> - <u>Google</u>

	2003					
10	EE	Satoshi Morinaga, Kenji Yamanishi, Jun-ichi Takeuchi: Distributed cooperative mining for information consortia. KDD 2003: 619-624				
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9	EE	Kenji Yamanishi, Jun-ichi Takeuchi: A unifying framework for detecting outliers and change points from non-stationary time series data. KDD 2002: 676-681				
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8	EE	Kenji Yamanishi, Jun-ichi Takeuchi: Discovering outlier filtering rules from unlabeled data: combining a supervised learner with an unsupervised learner. KDD 2001: 389-394				
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7	EE	Kenji Yamanishi, Jun-ichi Takeuchi, <u>Graham J. Williams, Peter Milne</u> : On-line unsupervised outlier detection using finite mixtures with discounting learning algorithms. <u>KDD 2000</u> : 320-324				
6		Jun-ichi Takeuchi, Naoki Abe, Shun-ichi Amari: The Lob-Pass Problem. J. Comput. Syst. Sci. 61(3): 523-557 (2000)				
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Coauthor Index

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	Naoki Abe	[1] [3] [4] [5] [6]			
2	Shun-ichi Amari	[<u>6</u>]			
3	Peter Milne	[7]			
4	Satoshi Morinaga	[10]			
5	Atsuyoshi Nakamura	[<u>4</u>] [<u>5</u>]			
6	Manfred K. Warmuth	[1]			
7	Graham J. Williams	<u>[7]</u>			
8	Kenji Yamanishi	[<u>7</u>] [<u>8</u>] [<u>9</u>] [<u>10</u>]			

DBLP: [Home | Search: <u>Author</u>, <u>Title | Conferences | Journals</u>] <u>Michael Ley</u> (ley@uni-trier.de) Fri Apr 30 16:27:21 2004



Kenji Yamanishi

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29	EE	Hang Li, Kenji Yamanishi: Topic analysis using a finite mixture model. <u>Inf. Process. Manage.</u> 39(4): 521-541 (2003)			
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28	EE	Satoshi Morinaga, Kenji Yamanishi, <u>Kenji Tateishi, Toshikazu Fukushima</u> : Mining product reputations on the Web. <u>KDD 2002</u> : 341-349			
27	EE	Kenji Yamanishi, <u>Jun-ichi Takeuchi</u> : A unifying framework for detecting outliers and change points from non-stationary time series data. <u>KDD 2002</u> : 676-681			
26	EE	Kenji Yamanishi, <u>Hang Li</u> : Mining Open Answers in Questionnaire Data. <u>IEEE Intelligent</u> <u>Systems 17(5)</u> : 58-63 (2002)			
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1	Toshikazu Fukushima	[28]
2	Akihiko Konagaya	[2]
3	Hang Li	[17] [20] [23] [25] [26] [29]
4	<u>Hiroshi Mamitsuka</u>	[<u>6</u>] [<u>11</u>]
5	Peter Milne	[22]
6	Satoshi Morinaga	[28] [30]
7	Jun-ichi Takeuchi	[22] [24] [27] [30]
8	Kenji Tateishi	[28]
9	Graham J. Williams	[22]

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Michael Ley (ley@uni-trier.de) Fri Apr 30 16:27:21 2004



Graham Williams: Publications



Last Modified 2000/05/15 14:03:34 Graham. Williams@cmis.csiro.au

Publications on the following topics are included:

- Data Mining and Machine Learning
- Spatial Reasoning
- Databases and Legacy Systems
- Knowledge Representation

Data Mining and Machine Learning

Outlier Detection Using Replicator Neural Networks

Hongxing He, Simon Hawkins, Graham Williams, Rohan Baxter DaWaK 2002

Mining Temporal Patterns from Health Care Data

Weiqiang Lin, Mehmut Orgun, Graham Williams DaWaK 2002

Feature Selection for Pathology Laboratory Monitoring

Simon Hawkins, Graham Williams, Rohan Baxter

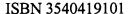
Topics in Health Information Management, Volume 22 Number 1 August 2001 Pages 14-23

The Pathology Explorer

Graham Williams and Simon Hawkins CMIS Technical Report Number 01/116 Report in Confidence to the Health Insurance Commission

Advances in Knowledge Discovery and Data Mining

David Cheung, Graham J. Williams, Qing Li 5th Pacific Asia Conference, PAKDD 2001, Hong Kong, China, April 2001, Proceedings. Lecture Notes in Artificial Intelligence, Volume 2035, Springer.



Feature Selection for Temporal Health Records

Rohan A. Baxter, Graham J. Williams, Hongxing He in Advances in Knowledge Discovery and Data Mining, Editted by David Cheung, Graham J. Williams, Qing Li Lecture Notes in Artificial Intelligence, Volume 2035, Springer, April 2001. Proceedings of the 5th Pacific Asia Conference on Knowledge Discovery and Data Mining PAKDD 2001, Hong Kong, China.

Temporal Data Mining Using Hidden Markov-Local Polynomial Models

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Data Mining of Administrative Claims Data for Pathology Services

Simon Hawkins, Graham Williams, Rohan Baxter, Peter Christen, Michael Fett, Markus Hegland, Fuchun Huang, Ole Nielsen, Tatiana Semanova, Andrew Smith Hawaii International Conference on System Sciences (HICSS-35), Data Mining in Health, January 2001, Hawaii, USA

Temporal data mining using multi-level local polynomial models

Weiqiang Lin, Mehmet A. Orgun, Grhama J. Williams In Second International Conference on Intelligent Data Engineering and Automated Learning Lecture Notes in Computer Science, Springer, December 2000. IDEAL 2000, Hong Kong.

On-line Unsupervised Outlier Detection Using Finite Mixtures with Discounting Learning Algorithms

[ps]

Kenji Yamanishi, Jun-ichi Takeuchi, Graham Williams, Peter Milne Proceedings of the Sixth ACM SIGKDD International Conference on Knowledge Discovery and Data Mining KDD-01, August 20-23, 2000, Boston, MA USA

Applications of Artificial Intelligence in Industry

Dickson Lukose, Graham Williams (editors)

Proceedings of the Symposium on the Application of Artificial Intelligence in Industry.

Melbourne, Australia, August 2000
ISBN 0730027937

Mining Taxation Data with Parallel BMARS

[pdf ps]

Sergey Bakin, Markus Hegland, and Graham Williams Parallel Algorithms and Applications Vol 15, pp 37-55, May 2000

The Integrated Delivery of Large-Scale Data Mining: The ACSys Data Mining Project

Graham Williams, Irfan Altas, Sergey Bakin, Peter Christen, Markus Hegland, Alonso Marquez, Peter Milne, Rajehndra Nagappan, and Stephen Roberts In Large-Scale Parallel Data Mining, State-of-the-Art Survey Editted by Mohammed J. Zaki and Ching-Tien Ho Lecture Notes in Artificial Intelligence, Volume 1759 Springer-Verlag, 2000

Data Mining Tools

Irfan Altas, Sergey Bakin, Markus Hegland, Stephen Roberts, Berwin Turlach, and Graham Williams

IEEE Transactions on Concurrency

Submitted 1999

An Overiew of ACSys Data Mining

Graham J. Williams
Computational Techniques and Applications Conference and Workshops
(CTAC99)
Canberra, September 1999

Integrated Delivery of Data Mining

Graham J. Williams KDD'99 Workshop on Large-Scale Parallel KDD Systems San Diego, August 1999

Evolving Interestingness for Data Mining

Graham J. Williams Third Pacific-Asia Conference on Knowledge Discovery and Data Mining Beijing, April 1999

Data Mining Tutorial

Graham J. Williams SEAL'98 Canberra, November 1998

Evolvolutionary Techniques in Data Mining Interestingness

Graham J. Williams
Workshop on Evolutionary Computation
Canberra, October 1998

The Data Miner's Arcade: Pluggable Data Mining

Graham J. Williams Technical Report May 1998.

Abstract

The Data Miner's Arcade is a Java-based environment for data mining. It implements an Object-Oriented model for the Data Mining process, with **standard** interfaces for accessing data and for delivering results. By developing standards, new tools can plug into the environment with a minimum of effort, providing 'Plug-n-Play' opportunities with new tools as they become available. Data can be accessed from Database systems through ODBC and JDBC, or from other sources and managed internally within the Arcade. The Extensible Markup Language (XML) is used as the target "language" for all Data Mining tools within the environment. The Predictive Modelling Markup Language (PMML) developed by UIC is an example of the XML markup that the system handles. Data Mining tools produce as their output documents that conform to PMML. These can then be visualised, run, or combined with other models as appropriate, all within The Data Miner's Arcade environment.

To What Extent can Data Mining be Proceduralised

Graham J. Williams
Panel Discussion
Pacific-Asia Conference on Knowledge Discovery and Data Mining (PAKDD-98)
Melbourne, April 1998.

High Performance Data Managment Issues in Data Mining

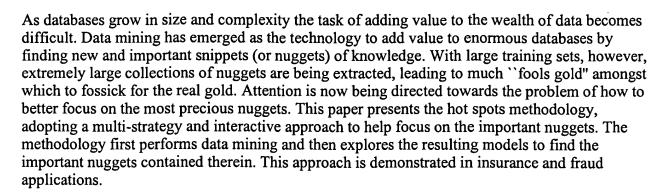
Graham J. Williams
Presented to the Workshop on Parallel and Distributed Data Mining
Pacific-Asia Conference on Knowledge Discovery and Data Mining (PAKDD-98)
Melbourne, April 1998.

Mining the Knowledge Mine: The Hot Spots Methodology for Mining Large Real World Databases

[pdf ps ps.gz]

Graham J. Williams and Zhexue Huang in Advanced Topics in Artificial Intelligence Lecture Notes in Artificial Intelligence Volume 1342, Pages 340--348 Springer-Verlag, 1997

Abstract



PEPNet: Parallel Evolutionary Programming for Constructing Artificial Neural Networks [pdf ps ps.gz].

Gerrit A. Riessen, Graham J. Williams, and Xin Yao Sixth Annual Conference On Evolutionary Programming (EP97) Indianapolis

Abstract

This paper presents a description of an evolutionary artificial neural network algorithm, EPNet and its extension taking advantage of a High Performance Computing Environment. PEPNet, Parallel EPNet, implements four forms of parallelism and this paper describes two of those parallelisms. Experimental studies have shown promising results with better time and prediction performance.

A Case Study in Knowledge Acquisition for Insurance Risk Assessment using a KDD Methodology

[pdf ps ps.gz]

Graham J. Williams and Zhexue Huang
Pacific Rim Knowledge Acquisition Workshop (PKAW96)
Sydney

Abstract

We describe some initial experiences in dealing with the task of acquiring knowledge where a very large collection of case histories is available. A Knowledge Discovery in Databases (KDD) approach is taken. KDD is the process of extracting novel information and knowledge from large databases, consisting of many interacting stages performing specific data manipulation and transformation operations with an information flow from one stage onto the next (and usually with feedback into previous stages). We characterise our experiences of this process for the task of acquiring knowledge for the domain of motor vehicle insurance premium setting for NRMA Insurance Limited.

Parallel Decision Tree Induction

Graham J. Williams

CSIRO DIT Data Mining Technical Report TR-DM-96024

Abstract

Knowledge discovery in databases (or KDD) and it's associated data mining technologies are making enormous demands on traditional machine learning and statistical algorithms. KDD often deals with extremely large databases, often in sizes measured in terms of gigabytes rather than megabytes. Traditional machine learning and statustical techniques begin to be strecthed beyond their capabilities when the data sizes reach many thousands of records. In this paper I review our work in dealing with very large datasets in the context of traditional decision tree induction algorithms (ID3 and C4.5). MIL (Williams 1988, Williams 1990), for Multiple Inductive Learning, is a system for inducing multiple decision trees in parallel, transforming those trees to rules, and then intelligently merging the resulting rule sets into a unified knowledge base. Our efforts to parallelise the decision tree induction algorithm for the Fujitsu AP1000 and the Thinking Machine Corporation's CM-5 high performance copmuters are also reviewed.

PEPNet: Parallel Evolutionary Artificial Neural Networks (<u>Poster</u>) [<u>pdf ps ps.gz</u>]

Gerrit Riessen, Xin Yao, Zhexue Huang, Peter Milne, and Graham Williams Fifth Australian Conference on Neural Networks (ACNN96)

Abstract

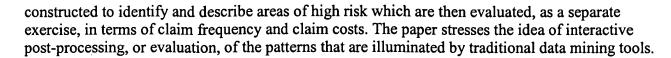
Artificial Neural Networks (ANNs) provide an important classification tool for Knowledge Discovery in Databases (KDD). Unfortunately ANNs require considerable time to train, particularly when large datasets are involved. Training time is also adversely affected when the characteristics of the dataset are not consistent with the structure of the ANN. In developing ANNs there are no hard and fast rules for determining the structure of the network. Evolutionary Artificial Neural Networks (EANNs) take advantage of evolutionary search techniques to address some of the problems associated with developing optimal ANNs. EANNs dynamically modify the structure of the ANNs on the basis of performance. EPNet (Yao and Liu 1996) is a serial algorithm which adopts these ideas to produce efficient ANNs. Such techniques produce greater accuracy in the networks, however at the expense of extra computational and storage requirements. Our work focuses on PEANNs, Parallel Evolutionary Artificial Neural Networks. PEANNs have the potential to produce accurate networks in significantly less time than serial EANNs using larger datasets. A parallel implementation of EPNet, called PEPNet, is being developed to explore this hypothesis.

KDD for Insurance Risk Assessment

Graham J. Williams and Zhexue Huang March 1996 CSIRO DIT Data Mining Technical Report TR-DM-96014

Abstract

Insurance is a business of risks. Identifying and understanding areas of risk is an important task performed by an insurer. An assessment of risk is used to set the appropriate premium for insurance policies. This paper describes a KDD exercise which uses decision tree techniques to identify significant areas of risk within an insurance portfolio. The real world dataset used contains information about policies and insurance claims on those policies. Decision trees can be



Modelling the KDD Process

Graham J. Williams and Zhexue Huang February 1996 CSIRO DIT Data Mining Technical Report TR-DM-96013

Abstract

Knowledge Discovery in Databases (KDD) is the process of extracting novel information and knowledge from large databases. This process consists of many interacting stages performing specific data manipulation and transformation operations with an information flow from one stage onto the next (and often back into previous stages). The process can be very complex and may exhibit much variety in the context of the variety tasks undertaken within KDD. In this paper we characterise our experiences of the KDD process and formalise its key elements in a model. A case study of insurance risk analysis for policy premium setting is used to illustrate the process and the model. The model provides a framework for comparing and differentiating various approaches to KDD.

Inducing and Combining Multiple Decision Trees

[280K gzip Postscript]

Graham J. Williams

PhD Thesis, Australian National University,
Canberra, Australia, 1990

Abstract

Most activities in our daily life require us to make decisions, many subconsciously. Knowledge is the key to correct decision making. Its representation and use by machine has been a major goal throughout the history of computing machinery. Learning is one of the most important components of intelligence and is a crucial aspect of knowledge-based systems. The research reported on here focuses on the acquisition of decision trees and their transformation to rules. A well-established practical tool for machine learning (ID3) is used as a basis for an approach to building, and then combining, multiple decision trees.

Combining Decision Trees: Initial results from the MIL algorithm

Graham J Williams

Artificial Intelligence Developments and Applications
edited by J. S. Gero and R. B. Stanton

Elsevier Science Publishers
1988, Pages 273-289

Some Experiments in Decision Tree Induction

Graham J Williams



Australian Computer Journal 1987, Volume 19, Number 2, Pages 84-91

Spatial Reasoning

Design of Decision Support Systems as Federated Information Systems

D. J. Abel, Kerry Taylor, Gavin Walker, and Graham Williams Decision Support Systems for Sustainable Development Edited by Kersten, Mikolajuk, and Yeh Kluwer Academic Publishers, 1999

Templates for Spatial Reasoning in Responsive GIS

[8K gzip Postscript, first two pages only]

Graham J Williams
International Journal of Geographical Information Systems
1995, Volume 9, Number 2, Pages 117-131

Abstract

Responsive geographical information systems (GIS) address the needs of the decision maker working in a spatially oriented environment where data is regularly updated, where the data is often voluminous, incomplete, and noisy, and where timely decisions must be made. Such environments stretch the capabilities of traditional GIS. A responsive GIS must play a more active role in the support of the decision maker. This paper introduces the concept of a responsive GIS and demonstrates the integration of artificial intelligence techniques and object-oriented database technology to provide such active support. Expert knowledge, represented as Templates, can have both spatial and temporal components, and remains within the GIS framework rather than providing separate, and often disjoint, GIS and Expert System modules.

Representing Expectations in Spatial Information Systems

Graham J Williams and Steve G. Woods

Advances in Spatial Databases: Third International Symposium, SSD '93

Edited by D. J. Abel and B. C. Ooi

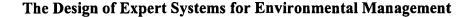
Lecture Notes in Computer Science, Volume 692, Springer-Verlag, 1993

GEM: A Micro-Computer Based Expert System for Geographic Domains

Graham J. Williams, J. Richard Davis and Paul M. Nanninga

Proceedings of the Sixth International Workshop and Conference on Expert Systems and Their Applications

Avignon, France, 1986.



J. Richard Davis, Paul M. Nanninga and G. J. Williams Readings in Australian Geography
Proceedings of the 21st IAG Conference
Perth, Australia, 1988

Geographic Expert Systems for Resource Management

J. Richard Davis, Paul M. Nanninga and G. J. Williams

Proceedings of the First Australian Conference on Applications of Expert Systems

Sydney, Australia, 1985

Databases and Decision Support Systems

The Design of Decision Support Systems as Federated Information Systems

D. J. Abel, K. L. Taylor, G. C. Walker, and G. J. Williams

Proceedings of the Decision Support Systems for Developing Nations, Taiwan. December 1995

The Virtual Database: A Tool for Migration from Legacy LIS

D. J. Abel, B. C. Ooi, R. A. Power, K.-L. Tan, G. J. Williams, and X. Zhou In Proceedings of the 22nd Annual Conference of the Australian Urban and Regional Information Systems Association AURISA '94 Sydney, Australia, 1994

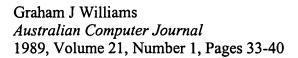
The Virtual Database

David J. Abel, Beng Chin Ooi, Robert A. Power, Kian-Lee Tan, Graham J. Williams, and Xiafang Zhou

In Proceedings of the 21st Annual Conference of the Australian Urban and Regional Information Systems Association AURISA '93
Sydney, Australia, 1993

Knowledge Representation

FrameUp: A frames formalism for expert systems



Abstract

This paper presents an introduction to frames-based representation schemes for use in the construction of rule-based expert systems. The features that are relevant to such expert systems are discussed, followed by an example of the type of rule application mechanism that the system implements. Advantages of such a system are discussed.

This document is maintained by Graham Williams.

Last Modified 2002/04/16 14:24:22 Graham.Williams@cmis.csiro.au